

# EVALUATION DESIGN AND BUILD CONTRACT SYSTEM IN MIXED USED BUILDING PROJECT BASED ON STANDARD CONTRACT MANAGEMENT BODY OF KNOWLEDGE

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## Abstract

In order to expedite preparation and tender process, design and build contract is used for Mixed Use Building Project. In practice, many claims are raised by contractors, causing dispute among related stakeholders that should be minimized by proper contract management. This study aims to find out the right construction and design construction contract management strategy in the Mixed Use Building project based on Contract Management Body of Knowledge by conducting surveys and interviewing experts. This study obtained a contract management for design and build which is risk based.

## Keywords

Contract management, design and build, mixed use building project, claim, dispute, CMBOK

## 1. Introduction

In order to expedite tender process, design and build contract was chosen for mixed use project. But in its implementation, there are so many claims that leads to dispute. There is a weakness in design and build contract system. In this research, evaluation for design and build system in the mixed use building project is based on Contract Management Body of Knowledge 4<sup>th</sup> Edition.

The purpose of this research is to explain the project design management system (design and build) in the Mixed Use Building project based on Contract Management Body of Knowledge.

This research will show the process of design and build contract in mixed use building projects. It also explains the objectives of each contract management activity based on the Contract Management Body of Knowledge and able to identify the risk factors that exist in the management of design contracts that has an impact to dispute.

## 2. Literature Review

Mixed Use Development is a smart development where the same land is being used with different type of buildings and functions. Among them can function as apartments, retails, hotels, hospitals, offices, and schools. This research will evaluate design and build contract system for mixed use building project.

NCMA has issued a guidance for contact management in the end of 2013, it is known as CMBOK (Contract Management Body of Knowledge) 4<sup>th</sup> Edition. In this research, evaluation for design and build contract system will be based on CMBOK 4<sup>th</sup> Edition. We can find the outline competencies from CMBOK as shown in the figure below.

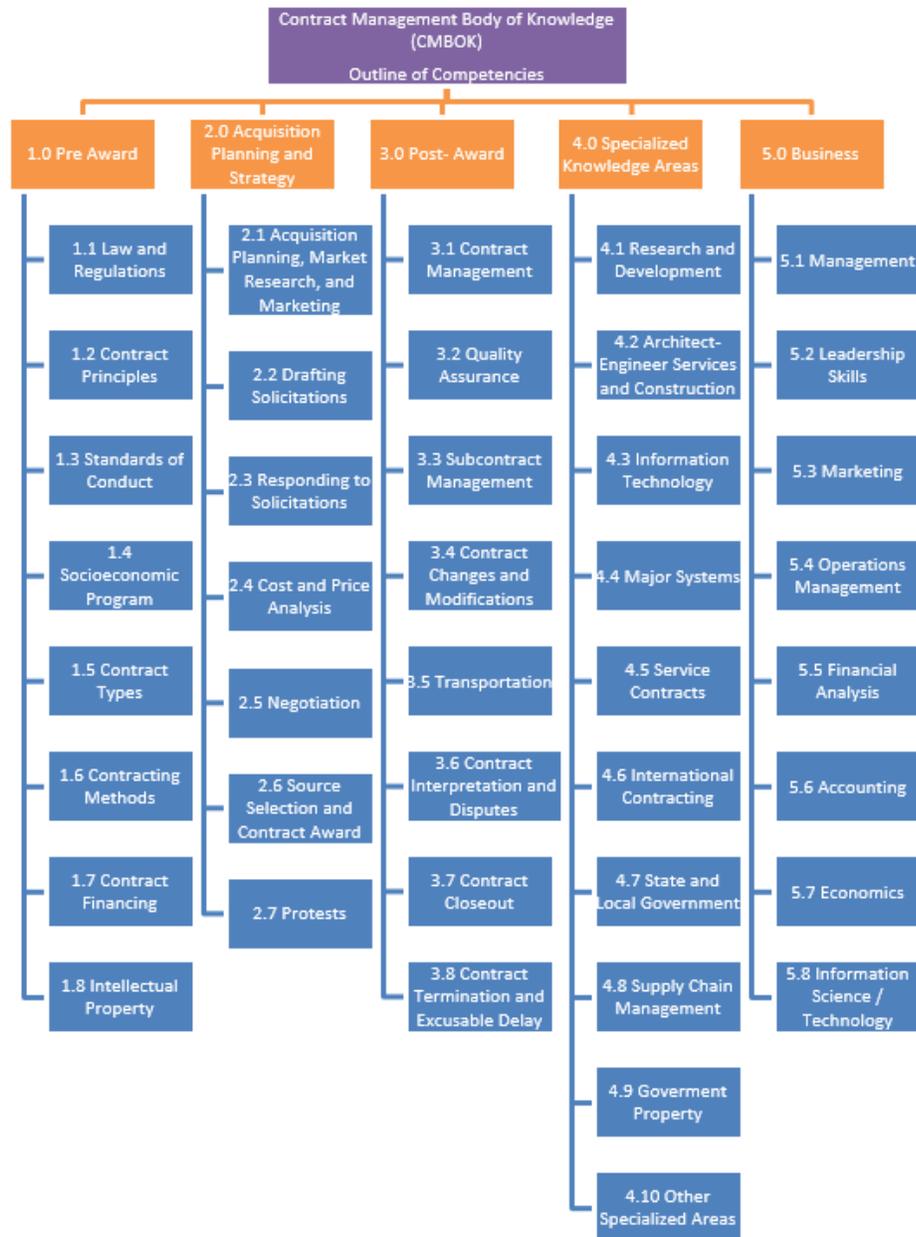


Figure 1. *Contract Management Body of Knowledge (CMBOK) Outline of Competencies*

### 3. Research Methodology

In this research, data collection was done by survey distribution to experts and non-experts, expert interviews, and response questionnaires. This research also used statistical analysis using SPSS version 23 to get data validation. There are some statistical analysis used in this research such as homogeneity test, validity and reliability test, RII (*Relative Importance Index*), Correlation Analysis and Factor Analysis.

#### **4. Data Analysis & Discussion**

After interviewing with the experts, we found 5 (five) processes or stages of contract management of construction design and build to minimize the emergence of the claim that lead to dispute on the project mixed use building from the owner's point of view as follows:

1. Pre Award
2. Acquisition Planning & Strategy
3. Post Award
4. Specialized Knowledge Areas
5. Business.

Based on Contract Management Body of Knowledge & other literatures, there are 74 variables that affect to dispute. After the experts validated, the variables become 52 variables where there are 9 variables of contract management that have the most influence on emergence claims that leads to dispute in mixed use building project with design and build contract system.

The objectives of the 9 (nine) sub-activities of construction design and build contract management influenced the emergence of a dispute-ending claim on a mixed use building project and the following are the discussed results of its validation by experts and literatures:

##### **1. Payment**

According to the experts, the paying sub-activity may lead to the emergence of claims that result in a dispute because late payments will result in the resignation of the work completion schedule that will result in claims of timing and automatic expense of preliminary costs will also increase, even the potentially raising claims of unit price increases.

##### **2. Ambiguous Contracts**

Based on the Contract Management Body of Knowledge 4th Edition, ambiguous contracts are among the sub-activities of the contract management process. According to the experts, this ambiguous contract may lead to dispute where the contractor is unwilling to continue the work before obtaining clarity regarding the contract. Therefore, in the implementation it should be clarified so that all the parties have the same understanding of the purpose of the contract.

##### **3. Clear Contract Methods**

According to the experts, this sub-activity affects the dispute because unclear contracting methods can make the understanding of each party different. Thus the contract method must be clear, bound by all the parties in the agreement, and all have the same understanding of this.

##### **4. Using the Right Contract Type**

According to the experts, the use of the right type of contract affects the emergence of claims that lead to dispute. In this case, the selection of the contract should be based on the drawings and other data used in the agreement. Because the use of the wrong type of contract can ultimately lead to the emergence of claims that cause a dispute.

##### **5. Delays due to Design Change**

According to the experts, the delay that occurs due to design changes affects the emergence of claims that lead to dispute. This is due to the emergence of claims for extension and even additional costs by contractors. So they need to be agreed beforehand, related to how long it takes to implement and agree if there is a design change.

##### **6. Additional Works**

According to the experts, added work has an influence on the emergence of claims that led to dispute. This is due to the emergence of claims for extension and even additional costs by contractors. So it needs to be agreed early regarding how long it takes to implement and approve if there are additional works to prevent dispute in the future.

##### **7. Document Change Order**

According to the experts, the sub-activity of change order document influences the emergence of claims that lead to dispute. This is because the change order document may result in extension claims, additional price or price reductions. Therefore, before the work is carried out, the change order document must be approved by both parties to prevent the occurrence of the dispute in the future.

#### 8. Economics

Based on the Contract Management Body of Knowledge 4th Edition, the economy is one of the sub-activities of the contract management process. According to the expert, this economic sub-activity affects the claims that leads to dispute. One example is the significant increase in the rupiah exchange rate. To prevent the occurrence of dispute in this regard, it is necessary to limit the exchange rate of rupiah to the contract also the need for good and proper consideration moreover study before the work commences.

#### 9. Management

Based on the Contract Management Body of Knowledge 4th Edition, management is one of the sub-activities of the contract management process. According to the expert, this sub-activity of management affects the claims that leads to dispute. In the management of contract management, a person's management skills are necessary. If a person does not have good management skills, the process of clarification and negotiation becomes prolonged and can lead to dispute. Besides, in terms of management, each party only rely on his own thoughts which may lead to dispute.

From the contract management activities obtained from previous literature studies, four sub-activities have high risk factors that have been validated by the experts. The four risk factors at the time of contract design management that have an impact on the emergence of claims that lead to dispute on the mixed use building project are as follows:

1. The risk of an unclear contracting financing system may stop the implementation of the work.

The unclear contract financing system can be caused by the unpreparedness of the owner in managing the financing which is required a good financial strategy to manage this. The impact of this risk can also cause the project to stop, the emergence of claims on idle can lead to dispute and it is the owner's risk.

2. The risk of uncontrolled budget due to lack of economic considerations

According to experts, this is because the owner does not do a proper feasibility study so that this can cause a dispute that is due to not reaching a price agreement.

3. The risk of late completion of the project due to late payments made by the owner

The late payment made by the owner is caused by the internal owner's problem where the funding to execute the project is not yet available and it can cause the project to stop then claims will arise extension of time, interest on late payment, the claim of idle from the contractor, dispute.

4. The risk of obtaining permit if it violates central government regulations

These things happen because the project has started before obtaining the permit, so it will impact on the emergence of contractor's claims for extension of time, and the possibility of price increases. These can make the project stop then lead to dispute. This risk is included as one of the high risk factors due to the project location located in Province DKI Jakarta which has very strict rules regarding permit.

To develop a design and build contract on Mixed Use Building project based on Contract Management Body of Knowledge, risk response needs to be done in the form of preventive and corrective actions should already exist on contract management activities that have high risk factor. The following is the development of the sub-activities in contract management design on the Mixed Use Building project based on Contract Management Body of Knowledge that has been validated by the final expert:

1. Unclearly of contract financing system

The unclear contract financing system that can hold work activities, can be prevented by not running the project if the financing system is unclear, adding clauses to the financing system contract in more detail and making sure all the financing is ready before the job starts. As a corrective action, in the

future the financing project must have clear steps and if the project is in progress, it should be possible to terminate the contract to reduce the idle claims of the contractor that can lead to dispute.

#### 2. Economics

The risk of uncontrolled budget can be caused by the increase in rupiah exchange rate and the owner does not conduct a proper feasibility study. Therefore, the preventive action that can be done is by hedging / limiting the exchange rate that is set in the construction contract and a proper study must be done and prepared before the work begins. As a corrective action can be done by negotiating in case of claims and can stop the work to reduce overhead claims from contractors.

#### 3. Payment by Owner

To prevent the late completion of the project caused by late payments made by the owner, it is necessary to take preventive actions such as the owner should make sure all funding is ready before appointing the contractor. In addition as a corrective step, the owner must immediately find a solution acceleration of payment and the owner must ensure the funding has been there first in order to implement the new project.

#### 4. Permit management

To prevent the occurrence of claims caused by no building permits, then the preventive action that should be taken is not to start the works if there is no permits. And in the future, every project should have permits during the process of management of contract management in order to avoid dispute in the future.

### 5. Conclusions

From the obtained research results it can be concluded that:

- 1) There are 5 variables of contract construction process design and build for mixed use building project: 1) Pre award; 2) Acquisition Planning & Strategy; 3) Post Contract; 4) Specialized Knowledge Areas and 5) Business.
- 2) There are 9 (nine) sub-activity variables in the process of construction contract design and build design in the mixed use building project that influences the emergence of claims that lead to dispute, namely: 1) Payment; 2) ambiguous contracts; 3) Clear contract method; 4) Using the right type of contract; 5) Delays due to design changes; 6) added work; 7) Change order document; 8) Economics; 9) Management.
- 3) There are 4 (four) variables of subcontracts of design and build contract management having high risk factors which influenced the emergence of the claim that lead to dispute on the mixed use building project. The high risk factors are: 1) The risk of unclear contract financing system can hamper the execution activity of the work; 2) The risk of uncontrolled budget due to lack of sound economic considerations; 3) The risk of late completion of the project due to late payments made by the owner; 4) The risk of obtaining IMB if it violates central government regulations.
- 4) From final validation by experts, preventive and corrective actions taken from sub-activities with high risk factors to develop a design and build contract management system that has the most influence on the emergence of a dispute-based claim in a mixed use building project based on the Contract Management Body of Knowledge .

### References

- Chan, E. H.W, and Yu,A.T.W, Contract Strategy for design and management in the design and build system, *International Journal of Project Management*, no.23, pp. 630-639, 2005.
- Huda, M.. Faktor- Faktor yang Mempengaruhi Klaim Konstruksi Dalam Penyelenggaraan Proyek Konstruksi. *Media Teknik Sipil*, Volume XI, pp. 84-89, 2011.

- Mutua, J. M. and Waiganjo, E., The influence of Contract Management on Performance of Outsourced Projects in Medium Manufacturing Enterprises in Nairobi County, Kenya, *International Journal of Business and Social Science*, Vol.5, No.9, pp.25-33, 2014.
- Nurisra, and Mubarak. Faktor-faktor Penyebab Pengajuan Klaim pada Proyek Konstruksi di Banda Aceh. *Jurnal Teknik Sipil* Universitas Syiah Kuala, pp. 93-99, 2009.
- Ogunsanmi, O.E. and Salako O.A., Risk Classification Model for Design and Build Projects, *Journal of Engineering, Project, and Production Management*, Vol. 1, No. 1, pp. 46-60, 2011.
- Rumbaugh, Margaret G, Contract Management Body of Knowledge, 4th Edition, NCMA, United State of America, 2013.
- Wall, Colin J, Dispute Prevention and Resolution for Design and Build Contracts in Hong Kong, *Commercial, Mediation & Arbitration Services Ltd*, 1993.

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